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An Econometric Analysis of Foreign Direct Investment Flows into Turkey from Major Global Regions: 1975-1999

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Abstract

This paper analyses the determinants of inward foreign direct investment (FDI) flows into Turkey from four major geographical regions and at aggregate level with a special emphasis on Turkey's application to the European Union (EU) to become a full member in 1987.

In contrast to previous studies this paper divides the inward FDI flows into Turkey from four major trading blocks and estimates separate FDI function for each region in addition to the aggregate FDI function.

It is found that Turkey has experienced both "investment creation and diversion" effects as a result of her membership application to the EU in addition to the market size hypothesis.

This paper also compares and contrasts the short and long run FDI functions of Turkey by the source of geographical regions and at aggregate level and draws conclusions from there.

Key Words: foreign direct investment, investment creation and diversion, Turkey and the EU, economic integration.
JEL Classifications: F15, F21, F5, C32.

I. INTRODUCTION

The purpose of this paper is to test the main hypotheses proposed in the literature and explain the determinants of Foreign Direct Investment (FDI) flows into Turkey from their geographical sources with a view of the dynamic effects of the Turkish-European Customs Union (TECU) for the period 1975-1999.

Hood and Young (1987) argued that the key feature of FDI is that it provides the host country with a " package" of knowledge, capital and entrepreneurship''. It may also make a positive contribution to economic growth and development in the host countries. But there are costs as well as benefits associated with inward FDI, such as the repatriation of profits to the parent company, which may cause balance of payments difficulties for the host state or Multinational Economic Enterprises (MNEs), which may use their monopoly power to exploit host country consumers, and so on.

The market size hypothesis in the literature of FDI plays a crucial role and it is regarded as the most important determinant for a foreign firm to invest abroad but that hypothesis is generally tested through the aggregate FDI functions. This paper attempts to test that hypothesis in a comparative manner by regions and at aggregate level.

Since the early 1970s Turkey has been attempting to transform her economy and to integrate it into the European Union (EU) by extensive liberalization processes in the economic and financial sectors. Turkey's long held aspirations of becoming a full member of the EU derive from the association agreement of Ankara. The most significant result of that agreement so far is that it has led to a Customs Union (CU) between the EU and Turkey in 1996 after twenty-two years of gradual abolition of tariffs and non-tariff barriers to trade on industrial products. Before the TECU was put into effect, Turkey applied for full membership in 1987. Despite its initial rejection in 1989, the subsequent attempts made her a suitable candidate in 2000.

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According to the theory of customs unions, the formation of a CU should have a significant impact on the FDI flows as the tariff realignment and adopting a common external tariff and the enlarged market will influence the investment decisions of foreign firms. Literature presents several empirical evidences of investment response of MNEs against economic integration especially in the case of enlargement stages of the EU.

Despite several studies analysing the static effects of the TECU, for example, Harrison *et al*. (1997), Halicioglu (1997a), and Merceniar and Yeldan (1997), as far as this paper is concerned, the impact of the TECU on the FDI flows into Turkey has not yet been analysed and tested as proposed in the literature as existing studies on the FDI flows into Turkey are descriptive and sectoral based, for example, Tatoglu and Kula (1999), except one study by Halicioglu (1997b).

The plan of the paper is as follows. Section II introduces the main theoretical issues of the determinants of FDI inflows with a special emphasis on "investment creation and investment diversion effects". The model of the paper is presented in section III together with a discussion on the variables selected. In section IV, the empirical results of the model are reviewed, and conclusion is in section V.

II. A BRIEF REVIEW OF THEORETICAL ISSUES ON THE DETERMINANTS OF FDI

This section aims to introduce briefly the theoretical discussions on the major determinants of FDI with an aggregate approach rather than a sector and/or firm specific view. Literature presents a number of empirical works on the determinants of FDI flows. By and large, the studies seem to concentrate on the following factors: market size, exchange rates, labour and capital costs, and economic integration and trade barriers.

Market Size

It is argued that characteristics of host countries such as market size, market growth, stage of development, and the presence of local competition will influence decisions to invest abroad. The level of FDI is positively related to the absolute size of a foreign market, which is also regarded as market size hypothesis. Empirical work has generally supported the hypotheses that both host market size and growth variables have significant positive effects on FDI, with the market size hypothesis supported more strongly. See also Clegg and Green (1999, p. 599).

Labour and Capital Costs

Cost differentials between the host and home countries should have some impact on the location of production. In this way, particularly as technology becomes standardised, production may be transferred to the countries especially where the real wage costs are low. A few studies, however, record significance for this variable. Hood and Young (1987, p.58) argue that it should be largely related to the different stages of production. Routine production stages will require low labour cost locations but as the production gets sophisticated the types of manpower might differ completely at every stage. Thus, a single measure of labour cost will fail to explain aggregate FDI.

Exchange Rates

The exchange rate between the home and host countries' currencies is also used to measure the costs of production in respective locations. An appreciation of the investor's home currency against the host country's should increase the FDI flows. It is also argued that planned FDI is deferred when the host currency's exchange value is high, and a rise is expected. See also Clegg and Green (1999, p. 600).

Economic Integration and Trade Barriers

The impact of economic integration on the FDI flows is generally analysed in the context of theory of customs unions or common markets. There are several theoretical approaches but they might be briefly summarised as follows:

(i) the first group approach is based on the *Hechscher-Ohlin theory* and predicts that the increase in external barriers in economic integration will increase income of import-competing industries in the member states of that integration, due to the return on capital increases in the integration area relative to foreign countries. Hence an inward FDI is also expected to increase.

(ii) according to the second approach, which is based on the *theory of international production*, inward FDI is a strategic response to the common external tariff of CUs as MNEs substitutes foreign activities for exports. Moreover, MNE will take advantage of the dynamic effects of CUs by utilising the enlarged market (i.e. economies of scale).

(iii) the last approach is based on the *theory of CUs and the internal market*. The strategic response of MNEs to the creation of CUs gives rise to "investment creation" and " investment diversion" effects. Kindleberger (1966) coined these two terms and they are related to the static effects of CUs but without their welfare implications. As cited in Yannopoulos, (1990, p.250) basically investment creation refers to a surge of inward FDI from non-member countries into the CUs and is regarded as the strategic response of MNEs to the trade diversion effects. Investment diversion refers to the shifting of FDI from one member of the CUs to another as a result of the trade creation effect.

However, Yannopoulos (1990, pp.250-253) argues that investment creation and investment diversion effects do not capture the full complexity of interrelations between CU formation and FDI and proposed four possible strategic responses of MNEs to the economic integration areas:

(i) *defensive import-substituting investment* refers to the strategic response of MNEs to the trade diversion effects of CUs. It is argued that MNEs invest in the CU areas to take advantage of the tariff realignment and to maintain its market share.

(ii) *offensive import-substituting investment* is also a strategic response of MNEs to the formation of CUs in which they might wish to take advantage of market unification (i.e. growing demand) and growth enhancement (i.e. the opening up of new markets).

(iii) *reorganization investment* takes places as MNEs regroup their production facilities in fewer locations in the CU where more favourable costs are found. It is regarded as a response to the trade creation effects.

(iv) *rationalized investment* refers to decreases in the production costs in the CUs areas, which make these locations better places for international sourcing by MNEs. This type of investment may not give rise to a net increase in FDI but simply a change in its geographical and/or industrial structure.

There are a number of empirical evidences on the impact of economic integration on the FDI flows, especially in the case of the EU. See for example, Rubio and Rivero, (1994) and Dunning (1997a) and (1997b).

III. THE MODEL

The aim of this section is to construct a *simple uniform partial adjustment model*, in order to test the main hypotheses of the theory of FDI and to explain the determinants of the FDI

flows into Turkey from the below specified major regions and at an aggregate level, with a view of the impact of the TECU process on the decisions of MNEs.
The main FDI theories and model are reviewed neatly in Agarwall (1980), Dunning (1997a and 1997b), and Chakrabarti (2001). From the main theories, the *conventional investment and the strategic theories* of MNEs appear to fit the aims of this study rather well. The first theory emphasises the importance of the locational determinants of FDI as the level of gross domestic product, the growth of the host market, factor prices and the trade barriers. On the other hand, the strategic theory concentrates on the long-term factors of FDI, which have mainly indirect effects on the decision to invest abroad. See also Aristotelous and Fountas (1996, p. 514). The strategic theory is also linked to the theory of CUs, the investment creation and diversion effects, which are also appropriate for the purpose of this study.

From the discussion in section II and above, the following partial adjustment model is constructed:

$$LFDI_t^j = \beta_0 + \beta_1 LGDP_t + \beta_2 LRW_t + \beta_3 LREX_t + \beta_4 CD_t + \beta_5 LFDI_{t-1}^j + u_t$$

Where the superscript *j* refers to the geographical source of the FDI flows into Turkey and the aggregate FDI flows, L stands for the natural logarithm, and the expected signs of the coefficients are
$\beta_1 > 0$, $\beta_2 < 0$, $\beta_3 > 0$, $\beta_4 > 0$ or < 0, $\beta_5 > 0$.

Identification of the Dependent Variables
The source of geographical regions of FDI flows into Turkey is adopted from the Turkish General Directorate of the Foreign Investments' classification. According to this classification, there are five major geographical sources of the FDI inflows into Turkey:

a) OECD countries, which are further divided into the two-subgroups as the EU and the other OECD countries. In this paper these two group countries are also used as the two major sources of FDI inflows and identified as the EU-based FDI (EUFDI) and the non-EU OECD based FDI (OECDFDI).
b) Islamic countries consist of the Middle East, Northern Africa and other Islamic countries and the FDI flows from these groups are named as MEAFDI.
c) Eastern Europe countries and Russia group, which also include the breakaway states of the ex-Soviet empire.
d) the last group of countries is classified as South East Asia, Latin America and the rest of the world.

Considering the insufficient share of the last two groups in the total FDI flows, the countries in these two groups were regrouped under the name of the rest of the world and is named as OFDI. These groups are rather homogeneous in terms of their geographical places, economic relations and political relations. Finally the total FDI (TFDI) flows refer to the summation of all the regions and are analysed in the same manner.
In order to highlight the overall shares of the regional FDI flows in the total FDI flows and the Turkish GDP, the following table is prepared below:

Table 1: Authorised FDI inflows into Turkey from major geographical regions as a percentage of the gross total FDI and GDP in selected years.

	EU FDI		Non-EU OECD FDI		Middle East FDI		Other FDI		
	a	b	a	b	a	b	a	b	TFDI/GDP (%)
1975	55.41	0.24	24.16	0.10	2.95	0.01	17.46	0.07	0.43
1980	65.71	0.14	11.52	0.02	0.67	0.00	22.09	0.04	0.21
1985	34.44	0.15	19.26	0.08	6.32	0.02	39.96	0.17	0.43
1990	67.64	1.14	20.19	0.34	2.16	0.03	9.99	0.16	1.69
1995	60.31	1.02	30.63	0.51	1.20	0.02	7.85	0.13	1.69
1999	60.96	0.51	22.06	0.18	1.07	0.00	15.89	0.13	0.84

Notes: Column a is the percentage shares of the respective regional FDIs in the total FDI and column b and the last column refer to the percentage shares of the regional FDIs and the total FDI in the GDP, respectively.
Source: The Turkish General Directorate of Foreign Investment and own elaborations.

As seen from table 1, the share of the EU countries in the total FDI inflows is very substantial and relatively steady in comparison to the other regions but the FDI inflows from the Islamic countries is almost negligible especially in recent years. The share of the non-EU OECD and other group based FDI flows follow quite a volatile trend even though the FDI flows from these groups started to re-increase in the 1990s. With regards to the contribution of the FDI to the Turkish economy, it is clear that the Turkish economy has been receiving considerably low level of foreign investment in respect to its economic potential.

Selection of the Independent Variables

In the light of data constraints and the issues discussed in section II, the following independent variables were selected to estimate the model above:

(i) the Turkish Gross Domestic Product (GDP), which proxies the size of the Turkish market and, which also allows us to test the so-called "market size hypothesis". By and large a positive relation is expected between FDI and the expected sales of foreign subsidiaries in the host countries. It is, however, also possible to find a non-significant relationship between FDI and the market size which would imply that MNEs would be more concerned with exports rather than with supplying the host country.

(ii) the Turkish Labour Costs (RW): as predicted in the conventional corporate investment theory, factor prices such as labour and capital would effect the decisions to invest abroad. Unless there is a strong substitution effect between labour and capital, the low cost labour attracts a higher level of FDI flows.

(iii) the Real Exchange Rate of Turkish Lira vis-a-vis the American dollar (REX): this independent variable determines the effect of relative wealth on FDI. A real depreciation in the host country's currency should lead to an increase in foreign purchase of domestic assets. Hence, a positive sign is expected on the coefficient of this variable.

(iv) the Integration Dummy (CD), which is employed to capture strategic reactions of the FDI flows to the integration process of the Turkish economy into the EU: it is assumed that foreign firms might expect better prospects for an economy that is in

the process of integrating its economy to the EU. As discussed in section II, the impact of the CUs on FDI flows is analyzed with the investment creation and investment diversion effects.

(v) finally the lagged value of the dependent variable is included as an independent in the model to capture the long-run investment behaviour of the FDI inflows, which also makes the model a simple partial adjustment. According to the acceleration principle, as aggregate demand grows, the need for new investment increases, and hence, FDI increases too. See also Barrell and Pain (1996, p. 203).

IV. THE EMPIRICAL RESULTS

This section of the paper presents the empirical results of the model outlined in section III. The data sources and the treatment of the variables are presented in Appendix.

Table 2 below presents the summary results of the regression equations for all the regions and at aggregate level.

Table 2: **Estimation results of the FDI inflows into Turkey by regions and total for period 1975-1999.**

	Dependent Variables									
	lreufdi		**lroecdfdi**		**lrmeafdi**		**lrofdi**		**lrtfdi**	
	SR	LR	SR	LR	SR	LR	SR	LR	SR	LR
lrgdp	0.40 (1.80)***	0.88	0.45 (1.53)	0.74	0.86 (1.58)	1.36	0.89 (3.04)*	1.10	0.55 (2.21)*	0.80
lrw	-0.13 (-0.2)	-0.17	-1.15 (-2.85)*	-1.88	-2.66 (-3.18)*	-4.22	-0.47 (-1.21)	-1.58	-0.69 (-1.83)**	-1.00
lrex	0.11 (0.68)	0.15	0.15 (0.16)	0.24	1.15 (0.43)	0.23	0.03 (0.22)	0.04	0.16 (1.07)	0.23
cd	1.11 (2.2)**	1.46	1.71 (3.55)*	2.80	1.11 (1.43)	2.28	-0.29 (-0.60)	-0.36	1.07 (2.42)*	1.55
lreufdi(-1)	0.23									
lroecdfdi(-1)			0.38 (2.48)*							
lrmeafdi(-1)					0.36 (0.17)					
lrofdi(-1)							0.19 (1.03)			
lrtfdi(-1)									0.31 (1.57)	
R^2		0.99		0.99		0.95		0.98		0.99
S.E.R.		0.45		0.43		0.91		0.44		0.40
F		391		422		73		306		466
Autocorrelation	[χ^2(1)]	4.19		7.12		0.09		5.30		0.34
Heteroscedasticity	[χ^2(1)]	2.86		1.34		0.10		0.94		0.68
Functional form	[χ^2(1)]	3.16		3.24		11.1		10.2		6.21

Notes: *, **, and *** indicate significance at the 10%, 5% and 1% levels respectively for a two-tail hypothesis. t-ratios are in parentheses. SR and LR refer to the short and long runs respectively. LR denotes that variables are real logarithmic.

Overview of the Results

These econometric results show that the sign expectations are fully realized in all estimations although some of the coefficients are statistically not significant at conventional significance level but the F test statistics suggest overall significance for all the regressions. In general, as indicated by the respective diagnostic tests, the results are rather satisfactory considering the time span of data for this of type modelling.

As seen from table 3, the market size hypothesis is supported for all the models but the response of the MNEs by their source to the Turkish market size differs considerably from

one region to another. For example, the EU and the non-EU OECD based firms seem to be less concerned with the market size compared to the firms of the Middle East and the rest of the world countries, as the respective coefficients in the latter groups double the former group's coefficients, which are, respectively, 0.40, 0.45, 0.86, and 0.89. Moreover the overall impact of the market size on the FDI inflows is rather inelastic. The labour cost seems to be a very important factor to invest in Turkey for the firms of the Middle East and the non-EU OECD based countries in respect to the firms of the rest of the world and the EU. Considering the real exchange rate variable it seems that none of the estimation has produced a significant result for it although the right sign were obtained in every case. On the other hand, the integration dummy variable indicates the existence of the investment creation and investment diversion effects as a result of the TECU. It appears that the EU, non-EU OECD and the Middle East based firms respond positively to the integration process of Turkey into the EU, unlike the rest of the world based firms. It may be argued tentatively that, as expected, the EU based firms responded to the trade creation effects of the TECU and decided to divert their investment from the EU to Turkey. On the other hand, the non-EU OECD and the Middle East based firms seemed to increase their investment in Turkey in order to avoid the trade diversion effects of the TECU. It is also anticipated that the positive effect of the TECU on the level of FDI from these regions will be more substantial in the long-run as the respective coefficients are rather large. But the formation of the TECU appears to have a negative impact on the level of investment from the rest of the world. It could be due to the fact that the increased competition in the TECU area might reduce the profitability of the investment for the rest of the world. With regard to the total FDI estimation, the overall results are consistent with the regional estimates but the magnitudes of the coefficients appear to represent the overall averages of the regional estimates.

V. CONCLUSION

This paper has attempted to empirically identify and explain the determinants of the FDI inflows into Turkey from the four major geographical regions and at aggregate level for the period 1975-1999. The hypotheses suggested in the theory of the FDI were tested for individual regions and at aggregate level. The results indicate that the market size hypothesis is supported for all the estimations but it does not present a strong case for attracting FDI inflows. It is also found that the impact of Turkish market size on the level of the EU and non-EU based FDI flows is rather weak. On the other hand, the low labour cost seems to be an important factor for foreign firms to invest in Turkey. In the case of the real exchange rates, no significant relation was found. The integration attempts of the Turkish economy into the EU appear to have led to some conflicting impacts on the level of the FDI flows into Turkey at regional level but the overall impact is still positive and should increase in the long-run.

APPENDIX

Descriptions of Variables and Data Sources

Dependent Variables

TFDI, EUFDI, OECDFDI, MEAFDI, and OFDI are, respectively, the total gross FDI authorisations in millions of Turkish Liras permitted by the Turkish General Directorate of

Foreign Investments, expressed in real terms using the Turkish whole sale price index of 1990=100. Source: The Turkish General Directorate of Foreign Investments.

Independent Variables

GDP= Gross Domestic Product, at market prices, in billion Turkish Liras of 1990. Source: State Statistics Institution of Turkey (SSIT).
RW= index of real labour cost, 1990=100. Source: SSIT.
REX= index of the real exchange rate of the Turkish Lira against the American dollar, 1990=100. Source: SSIT.
CD= dummy variable taking the value of one for the year 1988 through 1999, and otherwise zero.

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